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Citation for final published version:

Smith, Andrew P. ORCID: <https://orcid.org/0000-0001-8805-8028> and Firman, Kirsty 2019. Associations between the wellbeing process and academic outcomes. Journal of Education, Society and Behavioral Science 32 (4) , pp. 1-10. 10.9734/JESBS/2019/v32i430185 file

Publishers page: <https://doi.org/10.9734/jesbs/2019/v32i430185>
<<https://doi.org/10.9734/jesbs/2019/v32i430185>>

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Associations between the Wellbeing Process and Academic Outcomes

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Authors' contributions

This work was carried out in collaboration between both authors. Author APS was responsible for the design, data collection, statistical analysis and writing of the manuscript. Author KLF assembled the database and assisted with the statistical analysis and writing. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JESBS/2019/v32i430185

Editor(s):

(1) Dr. Bakare Kazeem Kayode, Department of Education Foundations, Faculty of Education, Al-Madinah International University, Malaysia.

Reviewers:

(1) P. Moodley, South Africa.

(2) Stamatis Papadakis, University of Crete, Greece.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/53119>

Original Research Article

Received 25 October 2019
Accepted 28 December 2019
Published 30 December 2019

ABSTRACT

Background: The Student Wellbeing Process Questionnaire (Student WPQ) has been used to identify predictors of both positive and negative wellbeing. These variables can now be used to investigate whether different aspects of the wellbeing process are associated with academic outcomes.

Aims: The wellbeing process involves established predictors such as exposure to stressors, negative coping, social support, positive personality, and conscientiousness. The wellbeing outcomes are positive (e.g. happiness, positive affect, and life satisfaction), and negative (e.g. stress, anxiety and depression). The aim was to examine associations between these variables and academic outcomes (Grade Point Average [GPA]; perceived efficiency; perceived course stress, and perceived workload).

Methodology: The research described in this paper was carried out with the approval of the ethics committee, School of Psychology, Cardiff University, and the informed consent of the participants (1296 psychology undergraduates; 89.4% female; 49.7% year 1; mean age 19.5 years). An online survey was carried out and this included the Student WPQ and academic outcomes. A MANOVA

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was conducted to examine associations between the wellbeing process variables and the academic outcomes.

Results: The main factor associated with the academic outcomes was conscientiousness. Those in the high conscientiousness category had higher GPA scores, reported greater efficiency and higher course stress and workload. GPA scores were also associated with student stressors, with those in the high stress category having lower GPA scores. Greater efficiency was associated with higher scores for positive wellbeing and social support, and lower negative coping. Higher course stress was associated with higher scores for exposure to stressors, negative coping and negative wellbeing. Higher negative wellbeing was also associated with higher perceived workload.

Conclusion: Conscientiousness is the best predictor of academic outcomes. Other components of the wellbeing process have selective effects on academic outcomes.

Keywords: Well-being; DRIVE model; student WPQ; conscientiousness; academic outcomes.

1. INTRODUCTION

1.1 Wellbeing and Academic Attainment

Success at university is influenced by a plethora of different factors, and research has shown that one of these factors is wellbeing. The majority of research that links wellbeing to academic attainment focuses on specific aspects of wellbeing, as opposed to measuring the entire concept. For example, Chamorro-Premuzic and Furnham [1] looked at how personality (a wellbeing predictor) affects academic performance. They found that students scoring high on neuroticism performed worse on five written exams, whilst those scoring higher on conscientiousness received better grades. Conscientiousness, has been widely reported to positively predict academic attainment of university students (Furnham, Chamorro-Premuzic & McDougall [2]; Laidra, et al. [3]). Komarraju, Karau, Schmeck and Avdic, [4] found that these two personality traits, along with openness to experience, extraversion and agreeableness influence academic achievement and in some cases, can explain up to 14% of variance in grade point average (GPA). Other important personality variables related to academic achievement are optimism and self-efficacy (Chemers, Hu & Garcia [5]). With regards to self-efficacy, it has been found to be a critical predictor of academic attainment (Putwain, Sander & Larivee [6]; Bembenuddy [7], with highly self-efficacious students demonstrating more persistence and more time spent monitoring their work (Bouffard, Parent & Larivee [8]). Other wellbeing researchers have looked at the relationship between coping styles and GPA. The main consensus is that problem-focused coping (tackling the cause of stress) is significantly correlated with higher academic attainment and motivation, particularly when

compared to emotion-focused coping i.e. reducing the emotions associated with a particular stressor (Struthers, Perry, & Menec [9]; Halamandaris & Power [10]). Negative coping styles such as self-blame has also been associated with poor academic performance (DeBerard, Glen & Deana [11]). Another main area of wellbeing is social support. Cutrona et al. [12] found a significant correlation between parental support and GPA, however no relationships were present when peer support was measured.

1.2 Specific Well-being Outcomes and Academic Attainment

Evidence also supports an association between specific well-being outcomes and academic attainment. In particular, poor academic attainment has been associated with perceived stress (Fazio & Palm [13]; Leppink, Odlaug, Lust, Christenson & Grant [14]) and depression due to its impact on cognitive function (Turner, Thompson, Huber & Arif [15]). Conversely, high academic attainment has been directly associated with the specific well-being outcome, life satisfaction (Chambel & Curral [16]). Low levels of life satisfaction and high levels of distress have a direct influence on student performance and mediate the association between academic work control and performance (Chambel & Curral, [16]; Cotton, Dollard & De Jonge [17]). Research has revealed a relationship between academic attainment and the outcomes of wellbeing, namely the negative impact of both depression (Haines, Norris & Kashy [18]; Andrews & Wilding [19]) and anxiety (Surtees, Wainwright & Pharoah [20]; Eisenberg, Golberstein & Hunt [21]) on academic success. It should be noted, however, that Hysenbegasi, Hass, and Rowland [22] found that this academic impairment is only likely at moderate to severe

levels of depression. While much research shows how wellbeing can positively predict academic performance, little is known about whether academic performance can boost wellbeing and thus, how time allocation to academic studies could influence students' wellbeing. Quinn and Duckworth [23] looked at the direction of causality between academic attainment and wellbeing and found that the relationship is reciprocally causal. Such that not only did the wellbeing of students predict their academic performance, the students who earned higher grades tended to experience higher wellbeing.

1.3 Measurement of Wellbeing

Therefore, the established link between wellbeing and academic attainment is dependent on how one measures wellbeing. The research supporting this association suggests that it may be specific wellbeing outcomes that are predictive of academic attainment. Alternatively, it has been argued that specific wellbeing outcomes are not the most useful predictors of academic attainment (Richardson, Abraham & Bond, [24]). In addition, there is variation in the results obtained with specific variables. For example, when the impact of stress on academic performance has been explored, the majority of studies have found a significant negative correlation between self-reported stress level and academic achievement (Elias, Siew Ping, & Chong Abdullah [25]; Stewart, Lam, Betson, & Wong [26]). However, there have been a few studies presenting the opposite findings (Siraj, et al. [27]; Kumari & Radhakanta [28]).

1.4 Past Attainment and Study Habits

Features of studying have also shown to be important in determining academic attainment. Past academic success is a good predictor of future attainment (Mckenzie & Schweitzer [29]). Richardson, Bond, and Abraham [24] completed a meta-analysis from 241 datasets to investigate predictor variables of GPA at university. From their UK data, a weak positive correlation was found between A-level results and GPA. For example, McFadden and Dart's [30] investigation reported that total study time positively influenced expected course grades. Similarly, Pascarella and Terenzini [31] found that study habits significantly relate to improved cumulative grade point average (GPA) in first year students, and Romer [32] observed a strong positive correlation between students' class attendance

and academic performance. In contrast, an extensive study conducted by Schuman, Walsh, Olson and Etheridge [33] identified that "at best [there is] only a very small relation between amount of studying and grades" (p. 945). Likewise, Nonis and Hudson [34] found that the amount of time spent studying had no direct influence on academic performance. One reason for this conflicting evidence could be that the relationship between time allocated to studying and academic attainment are usually investigated in the presence of other variables, e.g. motivation, stress or anxiety. Another, simpler explanation is that the results of the previous studies have not looked at all of student time use, but only that allocated to lecture attendance and self-study. However, all student activities can affect academic attainment and although time allocation is an area that students can control most, there has been little investigation of the topic. It is also important to note that lecture attendance and self-study may have independent contributions towards academic performance. Dolton, Marcenaro and Navarro [35] found that both formal study (lecture attendance) and self-study are significant determinants of exam scores, but the former was up to four times more important than the latter, revealing the importance of investigating the contribution of each factor to students' time allocation to study, rather than covering both terms under one measure.

1.5 Theoretical Context: The Wellbeing Process

One problem that becomes apparent is that wellbeing seems to be a very difficult concept to define, as it encompasses so many variables. Research on the wellbeing process has used the Wellbeing Process Questionnaire (WPQ-Williams & Smith [36-39]; Williams, Pendlebury & Smith [40]; Williams, Thomas & Smith [41]) and the Smith Wellbeing Questionnaire (SWELL-Smith & Smith [42-44]; Fan & Smith [45-47]). These questionnaires have also been used in research with students (Williams, Pendlebury, Thomas & Smith [48]; Alharbi & Smith [49]; Nor & Smith [50]). An important feature of these questionnaires is that they use short scales which are correlated with scores from longer established measures. These short scales have been shown to have good validity and reliability. They have been widely used in cross-sectional research and also in longitudinal studies which give a better indication of causality (Galvin [51]; Nelson [52]). The model of wellbeing has been

based on the Demands-Resources-Individual Effects (DRIVE) model (Mark & Smith [53-57]). This approach required measurement of exposure to stressors, resources such as control and support to help with such challenges, and individual differences in personality and coping style. New variables can be added to the model which has led to the inclusion of positive outcomes, such as positive affect, happiness and life satisfaction (Smith [58-59]; Smith & Wadsworth [60]; Smith, et al. [61]; Wadsworth, et al. [62]). These positive outcomes are often regarded as the key components of wellbeing but our more holistic approach has included both negative and positive characteristics (e.g. control, support and demands), appraisals (life satisfaction and perceived stress), individual characteristics (e.g. negative coping and positive personality) and outcomes (happiness, anxiety and depression). Other variables that have recently been included in the model relate to work-life balance and burnout (Omosehin & Smith [63]), psychological contract fulfilment (Ahmad, et al. [64-65]), culture (Capasso, et al [66-68]; Zurlo, et al. [69]) and training attitudes (Nor & Smith [70]).

The aim of the present research was to examine associations between the different components of the wellbeing process and subjective (perceived efficiency, course stress and workload) and objective academic outcomes (GPA).

2. METHODOLOGY

2.1 Participants

The participants were 1296 undergraduate psychology students in year 1 (49.7%) or 2 of their course (89.4% female; mean age: 19.5 years, range 17-48 years). They were given course credits for participating in the study.

2.2 Measures

The questionnaire was presented online using Qualtrics software. The survey consisted of the Student WPQ [48] and the independent variables were components of the wellbeing process model:

- Year of study
- Conscientiousness
- Positive personality (self-esteem, self-efficacy and optimism)
- Exposure to stressors
- Negative coping styles

- Social support
- Positive wellbeing outcomes
- Negative wellbeing outcomes

The dependent variables were:

- Grade point average (obtained from student records)
- Perceived efficiency of studying (measured on a 10 point scale)
- Perceived academic stress (measured on a 10 point scale)
- Perceived academic workload (measured on a 10 point scale)

3. RESULTS

The independent variables were dichotomized using a median split and these transformed scores were the independent variables in a multi-variate analysis of variance. The academic outcome measures were the dependent variables.

3.1 Effects of Conscientiousness

The overall effect of conscientiousness was significant (Wilks' Lambda = 0.950, $F=16.995$, $p < 0.001$, partial eta squared = 0.05). All of the individual variables showed a significant effect of conscientiousness and the mean scores for high and low groups are shown in Table 1. The high conscientiousness groups had higher GPA scores, reported greater efficiency, but also reported higher course stress and workload.

3.2 Selective Effects of Other Components of the Wellbeing Process

3.2.1 Positive personality

The only variable not associated with any of the academic outcomes was positive personality (self-esteem, self-efficacy and optimism).

3.2.2 Positive wellbeing

Higher positive wellbeing was associated with greater efficiency (Low positive wellbeing: mean = 5.73 s.e. = 0.09; high positive wellbeing: mean = 6.24 s.e. = 0.08 ; $F = 16.43$ $p < 0.001$).

3.2.3 Social support

Higher social support was also associated with greater efficiency (Low social support: Mean = 5.86 s.e. = 0.08; high social support: mean = 6.11 s.e. = 0.07; $F = 5.39$ $p < 0.05$).

Table 1. Conscientiousness and academic outcomes (scores are the means and s.e.s; higher scores = greater efficiency, stress and workload)

	Low conscientiousness	High conscientiousness	Significance
GPA	62.39 (0.29)	64.81 (0.30)	F=32.32 p < 0.001
Work efficiency	5.64 (0.07)	6.32 (0.08)	F=38.64 p < 0.001
Course stress	6.97 (0.06)	7.20 (0.06)	F = 6.46 p < 0.05
Workload	7.18 (0.06)	7.47 (0.07)	F = 9.43 p < 0.005

3.2.4 Negative wellbeing

Greater negative wellbeing was associated with more course stress (Low negative wellbeing: mean = 6.68 s.e. = 0.07; high negative wellbeing: mean = 7.49 s.e. = 0.07; F = 61.37 p < 0.001) and a perception of a higher workload (Low negative wellbeing: mean = 7.07 s.e. = 0.07; high negative wellbeing: mean = 7.59 s.e. = 0.07; F = 23.21 p < 0.001).

3.2.5 Exposure to stressors

Greater exposure to stressors was associated with lower GPA scores (Low stressors: mean = 64.25 s.e. = 0.29; high stressors: mean = 62.96 s.e. = 0.29; F = 9.33 p < 0.005) and more course stress (Low stressors: mean = 6.88 s.e. = 0.06; high stressors: mean = 7.29 s.e. = 0.06 ; F = 20.19 p < 0.001).

3.2.6 Negative coping

More frequent use of negative coping was associated with lower efficiency (Low negative coping: mean = 6.24 s.e. = 0.08; high negative coping: mean = 5.73 s.e. = 0.07; F = 22.44 p < 0.001) and greater course stress (Low negative coping: mean = 6.93 s.e. = 0.06 ; high negative coping: mean = 7.25 s.e. = 0.06 ; F = 13.53 p < 0.001).

3.2.7 Year of study

Finally, perception of course stress (Year 1: mean = 6.74 s.e. = 0.06; Year 2: mean = 7.44 s.e. = 0.06; F = 71.11 p < 0.001) and workload (Year 1: mean = 6.98 s.e. = 0.06 ; Year 2: mean = 7.67 s.e. = 0.06; F = 63.22 p < 0.001) increased from year 1 to year 2.

4. DISCUSSION

This study examined associations between components of the wellbeing process model and academic outcomes. The results confirm that conscientiousness is the major predictor of academic outcomes. This replicates previous findings and has the added advantage that other

components of the wellbeing process were statistically controlled. The only other variable associated with GPA scores was exposure to stressors, with high stress being associated with lower attainment. This again confirms previous results. Positive personality (self-efficacy, self-esteem and optimism) had no significant effect on any of the outcomes which suggests that previous research on these variables and academic attainment may reflect correlated attributes. Positive factors such as social support and the happiness, positive affect and life satisfaction (positive outcomes) were associated with greater perceived efficiency of study but not with perceptions of course stress or workload. In contrast, negative factors (exposure to stressors, negative coping and negative outcomes) were associated with perceptions of greater workload and course stress.

5. CONCLUSION

The literature reviewed in the introduction suggested that several components of the wellbeing process are associated with academic outcomes. A multi-variate approach to this topic confirmed that conscientiousness is the most important correlate of academic outcomes. Other predictor variables had selective effects, with only exposure to stressors influencing GPA scores. Positive factors (social support; positive wellbeing outcomes) were associated with positive perceptions of academic efficiency, whereas negative factors (stressors, negative coping and negative wellbeing outcomes) were associated with perceptions of higher workload and stress. These findings have important practical implications for university students and future research must investigate underlying mechanisms and impact using methodologies which address change over time and evaluate interventions.

6. LIMITATIONS

A major limitation of this study was that it was cross-sectional, and further longitudinal research is required to identify causal relationships. Another limitation is that the sample consisted of

first and second year psychology undergraduate students (mainly female). Studying this homogenous sample had the advantage that they were doing similar courses. However, research investigating heterogeneous samples with the present measuring instruments is now required. Such limitations are common in initial research which is still important as it provides a foundation for future research.

CONSENT AND ETHICAL APPROVAL

The study reported here was carried out with the approval of the ethics committee, School of Psychology, Cardiff University, and the informed consent of the participants.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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